



## RETURN BIDS TO:

## RETOURNER LES SOUMISSIONS À:

Bid Receiving Public Works and Government  
Services Canada/Réception des soumissions Travaux publics et Services gouvernementaux Canada  
See herein for bid submission  
instructions/

Voir la présente pour les  
instructions sur la présentation  
d'une soumission

NA

Manitoba

## SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise  
indicated, all other terms and conditions of the Solicitation  
remain the same.

Ce document est par la présente révisé; sauf indication contraire,  
les modalités de l'invitation demeurent les mêmes.

### Comments - Commentaires

### Vendor/Firm Name and Address

Raison sociale et adresse du  
fournisseur/de l'entrepreneur

### Issuing Office - Bureau de distribution

Public Works and Government Services  
Canada/Réception des soumissions Travaux publics et  
Services gouvernementaux Canada  
Government of Canada Building  
101 - 22nd Street East  
Suite 110  
Saskatoon  
Saskatche  
S7K 0E1

<b>Title - Sujet</b> Tandem Plow Truck	
<b>Solicitation No. - N° de l'invitation</b> 5P404-190664/A	<b>Amendment No. - N° modif.</b> 002
<b>Client Reference No. - N° de référence du client</b> 5P404-190664	<b>Date</b> 2020-05-20
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$STN-203-5296	
<b>File No. - N° de dossier</b> STN-9-42133 (203)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2020-06-02</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Central Daylight Saving Time CDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> McDonald, Shannon M.	<b>Buyer Id - Id de l'acheteur</b> stn203
<b>Telephone No. - N° de téléphone</b> (306) 251-2684 ( )	<b>FAX No. - N° de FAX</b> (306) 975-5397
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

Instructions: See Herein

Instructions: Voir aux présentes

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

This amendment is for solicitation: 5P404-190664/A

- |            |   |
|------------|---|
| Question 1 | Item 2.9.15 Road and Ambient Temperature Monitoring System Installed<br>Can you please provide examples, and clarify what expectations are?   |
| Response 1 | Item 2.9.15 has been removed from the Annex D Compliance Matrix – Minimum Mandatory Specifications as it was a duplicate to Item 2.11.29.   |
| Question 2 | Item 2.10.4 Heavy duty, 3000 Cold Cranking Amps (CCA) battery/batteries 2775 CCA. Please provide your minimum requirement of CCA.   |
| Response 2 | This will be 3 batteries with 1000 CA each which makes the 3000 cold cranking amps (CCA) The minimum is 3 batteries at 925 Cranking amps (CA) which is the 2775 minimum CA. So the minimum is 2775 CA   |
| Question 3 | Item 2.11.16 Back wall coat/safety vest and hard hat hangers in cab<br>Please provide an illustration, or expectations  |
| Response 3 | Item 2.11.16 has been removed from the Annex D Compliance Matrix – Minimum Mandatory Specifications   |
| Question 4 | Item 2.11.29 Ground temperature and outside air temperature sensors shall be installed and display into cab and visible to driver<br><br>Please provide clarification of expectations<br>Outside air temperature reading located within gauge cluster?  |
| Response 4 | Ground temperature must be installed and displayed into the cab and visible to the driver. This system is also incorporated in the 550 Rexroth system and has a display on the board. There also is a product as an example that we have used <a href="https://www.roadwatch.com/product/sensors/roadwatch%C2%AE-sensor-kit-display-and-12-extension-cable">https://www.roadwatch.com/product/sensors/roadwatch%C2%AE-sensor-kit-display-and-12-extension-cable</a> Road watch system available that also provides this information on temperature of road and air. This display is mounted in the truck. Item 2.11.29 has been amended in the Revised Annex D Compliance Matrix. |

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Delete: **ANNEX “D” - COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS**

Insert: **Revised ANNEX “D” - COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS**

*All other terms and conditions remain the same.*

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## ANNEX “D” - COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS

A complete list of the minimum mandatory performance specifications are detailed below in the “Compliance Matrix”. Bidders are to clearly demonstrate compliance with each mandatory specification.

1. Bidders **must** show compliance by addressing each performance specification in the Compliance Matrix, whether the product offered “meets” or “doesn’t meet”.
2. Bidders are requested to indicate how they meet each performance specification by recording this information under the Performance Specification Offered column in the Compliance Matrix.
3. It is requested that supporting technical documentation, including but not limited to, specification sheets, technical brochures, photographs or illustrations be provided with the bid at solicitation close and be cross-referenced on the Compliance Matrix for each performance specification to outline where in the supporting technical documentation it demonstrates compliance. It is the Bidders responsibility to ensure that the submitted supporting technical documentation provides detail to prove that the proposed product(s) meet the requirements of the Performance Specification. If published supporting technical document is not available, the Bidder should prepare a written narrative complete with a detailed explanation of how its bid demonstrates technical compliance.
4. If the supporting documentation referenced above has not been provided at bid closing, the Contracting Authority will notify the Bidder that they must provide supporting documentation within two (2) business days following notification. Failure to comply with the request of the Contracting Authority within that time period, will deem the bid non-responsive and the bid will be given no further consideration.
5. Bidders must address any concerns with the performance specifications in written detail to the Contracting Authority before bid closing as outlined in the Request for Proposal (RFP) document.
6. Failure to meet each mandatory performance specification will result in the bid being deemed non-responsive, and be given no further consideration.

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### COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS:

Requirement:	Manufacturer Offered:	Model number Offered#:
Tandem Plow Truck		

Item #	Performance Specification	Mandatory Performance Specification Met? Must indicate either Yes/No	Performance Specification Offered: Bidder should indicate how they meet the performance specification by recording this information in this column  <b>Cross Reference:</b> In this column, Bidders should cross-reference where this performance specification is indicated in their supporting documents.
<b>PART 1</b>			
<b>1.1 DESCRIPTION OF SYSTEM</b>			
1.1.1	Heavy Truck, 6x4, Diesel, minimum 29,937 Kg. (66,000 lbs) Gross Vehicle Weight Rating (GVWR); Truck Combination Unit.		
1.1.2	Unit must be a standard, current production unused vehicle.		
1.1.3	Must be equipped with a hydraulic system and combination sander/dump box, full trip one-way plow nose, right hand push and pull wing, and underbody plow.		
<b>1.2 OPERATING CONDITIONS</b>			
1.2.1	Unit must be capable of operation in ambient temperatures ranging from 45 degrees Celsius down to minus 40 degrees Celsius.		
1.2.2	Unit must be complete with all accessories customarily furnished and installed on this type of vehicle, whether specified herein or not, to enable the vehicle to function reliably and efficiently under all conditions of service, including severe winter conditions.		
1.2.3	Any item[s] not specifically requested but known to the vendor as being necessary for the safe, efficient use of the equipment tendered shall be clearly noted on the tender form. Otherwise it will be assumed this item[s] will be supplied at tendered price.		

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1.2.4	Vendor's bid for combination of engine RPM, transmission, axle ratio, and tire size must ensure that the vehicle will function to end use purpose with regard to acceleration, gradeability and startability under either empty or fully loaded conditions.		
<b>1.3 REQUIREMENTS OF REGULATORY AGENCIES</b>			
1.3.1	Unit must comply in all respects with the Highway Act regulations of the Province of Manitoba		
1.3.2	Unit must comply with all applicable Canadian Motor Vehicle Safety Standards (CMVSS).		
1.3.3	Unit must be delivered with a valid Commercial Vehicle Inspection recognized by the province of Manitoba.		
<b>1.4 MAINTENANCE AND WARRANTY</b>			
1.4.1	Contractor must provide One (1) hard copy and one (1) electronic copy (disk or memory stick) of each repair, diagnostic, electrical and parts manuals accurately identifying all components of the equipment, including the dump box.		
1.4.2	Contractor must provide access to any electronic diagnostics software or programs used in the repair and maintenance of all components of the equipment, including annual subscriptions or updates.		
1.4.3	Contractor must provide 2 hard copy operators manuals for the unit and (1) electronic copy (disk or memory stick)		
1.4.4	The warranty must include comprehensive powertrain and emissions system coverage.		
1.4.5	Warranty shall be full 100% parts and labour for the entire unit for a minimum period of one (1) year from the date the unit is first put into service.		

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1.4.6	Warranty support, parts and service shall be provided by an authorized dealer located in Manitoba. <b>Include</b> company name and contact information and contact person.		
1.4.7	Parks Canada shall be allowed to perform certain warranty repairs under the following conditions: (1) Prior approval from vendor (2) Warranty costs to be reimbursable in accordance with manufacturers guidelines (3) Vendor to supply necessary documents (4) Parks Canada Heavy Duty Shop rate is \$120.00 per hour		
1.4.8	Vendor shall be responsible for all costs related to movement of equipment for installation of additional equipment, pre-delivery, defect correction, and warranty, prior to acceptance.		
<b>1.5 DELIVERY</b>			
1.5.1	Contractor must lubricate and service unit prior to delivery with all lubricants and associated products suitable for the climatic conditions in which the vehicle must operate.		
1.5.2	Contractor must provide a minimum of 100 liters of fuel in truck at delivery.		
1.5.3	All necessary documentation required for licensing the vehicle for road use, by the issuing Provincial authority, must be provided to the consignee when unit is delivered.		
1.5.4	The Contractor must, at no extra cost, arrange with consignee to provide familiarization training/instruction, at the time of delivery, in the correct operating procedures, maintenance and running adjustments necessary to comply with the warranty conditions applicable to this equipment. Min 8 hours if required of operator mechanic training.		

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1.5.5	Successful bidder shall provide an Equipment Data Sheet. The data sheet will contain all applicable equipment data, serial numbers, service intervals and items. Must include a Complete cross reference guide for warranty approved oils and filters. The above information shall be supplied prior to delivery of first unit. (1) memory stick shall be provided with each unit.		
1.5.6	Successful bidder shall supply two (2) hydraulic and electrical blueprint(s) c/w detailed material list with unit PDF format or approved alternative.		
<b>PART 2 - REQUIREMENT DETAILS</b>			
<b>2.1 CHASSIS</b>			
2.1.1	The GVWR is to be a minimum of 27,216 kg. (66,000 lbs)		
2.1.2	Wheelbase must be a minimum of 6,096 mm. (240 in.) maximum of 6,198 mm (244 in)		
2.1.3	Usable clear cab to axle (CA) must be a minimum of 3810 mm. (152 in.)		
2.1.4	Reinforced frame, entire length		
2.1.5	Minimum 9,070 kg. (20,000 lbs.) front axle with matching steel leaf suspension. Front axle must be installed in standard configuration with no set back.		
2.1.6	Must have matching front shock absorbers		
2.1.7	Minimum 20,866 kg. (46,000 lbs.) tandem rear axle, no spin both axles, with a driver controlled traction differential, air operated		



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2.1.8	Rear suspension to be air ride type and be rated at a minimum of 20, 866 kg. (46,000 lbs). Left and right side to have its own leveling control valve.		
2.1.9	Front axle must be equipped with visible cap oil seals		
2.1.10	Power assisted steering must be capable of manual steering in the event of a power failure		
2.1.11	Tilt fiberglass hood and fenders with fixed position grill		
2.1.12	Spray suppressant mud flaps, mounted in front and behind rear wheels		
2.1.13	Integral front frame extensions which protrude 15 in. ahead of grill		
2.1.14	Design of the chassis should allow for the installation of a front crankshaft driven Power Take Off (PTO)		
2.1.15	Maximum height of 11 feet with all attachments up and all accessories.		
<b>2.2 RUSTPROOFING</b>			
2.2.1	Sheet metal areas of cab, firewall, doors (inside and out) and undercarriage must be treated with a rust preventative coating.		
<b>2.3 PAINTING</b>			
2.3.1	Cab must be painted yellow as per Canadian General Standards Board (CGSB) Specification 1-GP-12c, gloss yellow, 505-101 using polyurethane automotive Enamel		
2.3.2	Frame rails must be painted black		
2.3.3	Top of hood must be painted a flat black		
<b>2.4 ENGINE</b>			
2.4.1	Liquid cooled, turbocharged diesel engine, certified for on/off highway and construction duties		

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2.4.2	Minimum horsepower of 450		
2.4.3	Minimum peak torque, 2373 N.m (1750 lbs/ft.) at 1200 RPM, Governed speed 2100 RPM		
2.4.4	Dry type element air cleaner, mounted under hood, protected from rain and snow		
2.4.5	Oil filter, full flow type with replaceable element		
2.4.6	Minimum 1500 watt block heater with 175 watt oil pan heater on a common receptacle on drivers side		
2.4.7	Primary and secondary replacement element type fuel filters		
2.4.8	Spin On fuel/water separator		
2.4.9	Standard high opening type thermostat for use with ethylene glycol		
2.4.10	Ethylene glycol filtration system, anti-freeze for minus 40 degrees C.		
2.4.11	Single vertical exhaust stack with curved spout and bright metal perforated heat shield <b>max height 11 feet</b>		
2.4.12	Viscous, maintenance free, temperature controlled cooling fan with fiberglass blades		
2.4.13	C Brake compression brake, 3 position switch		
2.4.14	Insulation under hood and splash panels / skirting for noise abatement shall be supplied. Tunnel firewall liner with silencer		
2.4.15	Electronic throttle to control RPM speed shall be mounted in cab.		
2.4.16	A heavy-duty fuel oil water separator with heater and sight glass must be supplied.		

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2.4.17	Engine hood shall be one piece forward tilting with adequate side access panels for easy engine access with stationary chrome grille and radiator bug screen.		
<b>2.5 TRANSMISSION AND FINAL DRIVE</b>			
2.5.1	Fully automatic transmission with a minimum of 6 forward speeds. Transmission must have a minimum input horse power and torque rating of 450 hp and 1750ft/lbs of torque. Transmission must be sufficiently rated to operate continuous in severe winter applications		
2.5.2	Rear axle ratio to be sized to deliver a maximum road speed of 120 KPH. Vehicle to be delivered with the maximum road speed governed to 110 KPH		
2.5.3	Transmission oil cooler		
<b>2.6 BRAKES</b>			
2.6.1	Must be a full air system in compliance with Canadian Motor Vehicle Safety Standards (CMVSS) 121		
2.6.2	Positive, automatic moisture removing device		
2.6.3	An auxiliary air tank to release spring activated safety brakes		
2.6.4	Air dryer frame mounted. Desiccant cartridge to be spin-on type.		
2.6.5	Automatic front axle limiting valve		
2.6.6	All lines, components and fittings to meet Society of Automotive Engineers (SAE) and Department of Transportation (D.O.T.) standards		
2.6.7	Minimum 15 CFM Compressor		
2.6.8	Minimum 16. 5x6 S cam front brakes with automatic adjusters		

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2.6.9	Minimum 16. 5x7 S cam rear brakes with automatic adjusters		
2.6.10	Automatic drain valve shall be supplied with heater to drain moisture from main air tank.		
<b>2.7 WHEELS AND TIRES</b>			
2.7.1	Steel belted, steel cord radial tires		
2.7.2	Front: 425/65R22.5, 20 ply, highway tread		
2.7.3	Rear: 11.00 X 22.5 16 Pl. On/off road deep lug traction tire		
2.7.4	Hub piloted heavy duty, uni-mount type rims		
2.7.5	Front rim super single type 12.25X22.5		
2.7.6	Dual rear rims 8.25X22.5		
2.7.7	Spare front rim and front tire matching tread of front tires		
2.7.8	Spare rear rim and tire matching tread of rear tires		
<b>2.8 FUEL</b>			
2.8.1	Step tank(s) having a capacity of MIN. 125 GALLON/473 LITER ALUMINUM FUEL TANK(S)		
<b>2.9 INSTRUMENTS AND CONTROLS</b>			
2.9.1	Voltmeter		
2.9.2	Electric engine hour meter		
2.9.3	Coolant temperature gauge		
2.9.4	Engine oil pressure gauge		
2.9.5	Low oil pressure/high coolant temperature audible warning device		

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2.9.6	Fuel level gauge		
2.9.7	Tachometer		
2.9.8	Speedometer/odometer in kilometers		
2.9.9	Low air pressure warning device		
2.9.10	Back up warning alarm		
2.9.11	Exhaust manifold pyrometer		
2.9.12	Rear axle oil temperature gauge		
2.9.13	Transmission oil temperature gauge		
2.9.14	Primary and secondary air system gauges. Units of measurement to be in pounds per square inch		
2.9.15	REMOVED		
<b>2.10 ELECTRICAL SYSTEM</b>			
2.10.1	Switch, indicator and wiring for beacon light		
2.10.2	Low cut in, alternator minimum 130 amps		
2.10.3	LED Stop/turn/tail lights with separate back up lights		
2.10.4	Heavy duty, 3000 Cold Cranking Amps (CCA) battery/batteries. 2775 CCA		
2.10.5	Auto reset circuit breakers		
2.10.6	All lighting for plowing to follow TAC lighting standard diagram supplied (need document attached)		
<b>2.11 CAB AND ACCESSORIES</b>			
2.11.1	Dual sun visors		

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2.11.2	Cab air conditioning, high output heater and defroster		
2.11.3	Adjustable tilt steering column		
2.11.4	Cab interior light		
2.11.5	Windshield wipers, arctic type, variable/intermittent constant speed, fitted with a shear pin or equivalent feature with electric washer pump and windshield winter wiper blades. 2 GALLON WINDSHIELD WASHER RESERVOIR WITH FLUID LEVEL INDICATOR, WITH REMOTE FILL if required		
2.11.6	Power window, right hand side and driver's door, with the controls within easy access of the operator		
2.11.7	Driver's seat must be a three way adjustable, high back air suspension type with isolator; cloth trim and heated. Driver's seat must have National 2000 or equivalent high back air suspension type, fully padded and of heavy-duty cloth upholstery construction with foam rubber seat cushions with in-board and outboard movable arm rests, isolator, lumbar, 2 position front cushion adjust, -3 to +14 degree back angle adjust, cushion and back bolsters and seat heated		
2.11.8	Standard passenger seat		
2.11.9	Two power adjust exterior type chrome or stainless steel extendible, anti-glare rear view mirrors. West Coast type, left and right side mounted, minimum 180 mm. X 250 mm. (7"x16"). Stainless steel, <b>heated</b> , with LED clearance lights, 101 mm. (4") diameter convex spot mirrors. With remote control in easy access of driver to operate.		
2.11.10	Cab entry/egress handles, left and right sides		

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2.11.11	Air and electric operated horns Dual roof mounted chrome air horn shall be supplied complete with chrome snow shields. Also included an Electric horn		
2.11.12	Premium in-cab trim package: insulated padded cloth headliner, overhead console with netting, padded insulated door panels with map pockets, insulated padded back wall, Minimum 2 cup holders		
2.11.13	Require min 2 USB ports for charging and min 1 - 12-volt cigarette lighter receptacles.		
2.11.14	Battery disconnect switch outboard of driver's seat. 2 1/2 lb. fire extinguisher installed outboard of driver's seat. B.O.C. inside wall mounted triangle reflector and first aid kit.		
2.11.15	Floor covering – heavy duty insulated rubber matting AND one set of floor mats.		
2.11.16	REMOVED		
2.11.17	Lower and intermediate expanded tread plate aluminum steps, both sides shall be supplied. Boot brush on driver's side.		
2.11.18	Beacon shall be installed on a base on centre of cab shield, visible 360 degrees from 20ft.		
2.11.19	O.E.M. AM/FM/WB/clock3MM auxiliary output with multiple speakers / BLUETOOTH radio supplied (factory installed). (4) radio speakers in the cab		
2.11.20	Power operated windows and door locks with switches accessible to the operator on driver's side door. To be programmed not to auto lock.		
2.11.21	Three (3) sets of door/ignition keys must be supplied		

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2.11.22	Rubber fender lip extensions shall be supplied on both front fenders. Under hood skirting and sound abatement package to keep mud / dirt out of engine bay. Lower O.E.M. skirting and mud flaps at rear of front fenders to keep mud off of cab steps.		
2.11.23	All auxiliary lighting shall be factory wired for plow lights, spinner lights, blue and amber flashers, wing lights, beacon and stop/turn and reverse lights.		
2.11.24	Seat belts - two 3 point with retractors		
2.11.25	Cab shall have minimum (177 cm) 70" shoulder room approx. Cab shall have a minimum of (142cm) 56" floor to ceiling approx.		
2.11.26	Tripod mounted 8" stainless steel heated convex mirrors shall be supplied and mounted on both the left and right front fenders. One oval look down convex 6" chrome mirror supplied and mounted above passenger door.		
2.11.27	Exterior stainless steel / aluminum sun visor with five LED cab identification lights.		
2.11.28	A salt resistant coating shall be affixed to all wiring.		
2.11.29	Ground temperature must be installed and displayed into cab and visible to driver.		
<b>2.12 HYDRAULIC SYSTEM</b>			
2.12.1	Supply and install all necessary hydraulic components; valving, controls, hoses, solenoids, fittings, reservoir filters, electrical lines, gauges, pumps, etc., to complete a modular hydraulic system. The hydraulic valving must be operated electrically from a console installed in the cab of the vehicle.		



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2.12.2	The system must be used to operate all of the following hydraulic components:		
	a) Double acting snow plow wing (push and pull for extra width)		
	b) Double acting front mount one way and hydraulic tilt control of pitch of mold board (Adjust pitch of blade)		
	c) Double acting under body plow		
	d) Dump box with sander, conveyor, spinner, material gate and tilting floor		
	e) Controls to operate for a single acting hoist cylinder truck.		
	f) The design of the circuit must be such that temperatures must not exceed 160 degrees F. during conditions deemed as normal operations and speeds		
	G) All hydraulic hoses must be minimum 2 wire double braided		
2.12.3	Hydraulic system must be load sensing piloted control type:		
	a) Hydraulic pump must be a load sensing, pressure compensated piston type pump capable of a minimum 40 GPM of flow		
	b) Pump to be shaft driven off the crankshaft but cannot be belt driven off the engine.		
	c) Response time from 0 to full flow must be less than one (1) second		
2.12.4	Hydraulic system must have two types of filtration:		
	a) One tank mounted return style filter with by-pass		
	b) One high pressure filter full-flow mounted between pump discharge and control valve inlet		

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	<b>c)</b> Both filter housings must have restriction indicators		
	<b>d)</b> Micron ratings of each filter to be determined by hydraulic system manufacturer's recommendation.		
2.12.5	All Hydraulic hoses must be equipped with standard JIC fittings and be rated for severe winter conditions.		
2.12.6	The hydraulic control valve in this specification must:		
	<b>a)</b> Have a minimum of 10 sections		
	<b>b)</b> Be solenoid operated		
	<b>c)</b> Have a stroke limiter or a way of limiting the maximum flow on each segment		
	<b>d)</b> Have a means of manually functioning each segment		
2.12.7	The hydraulic control valve must be capable of controlling the following functions:		
	<b>a)</b> Dump box raise and lower - single acting cylinder (truck)		
	<b>b)</b> Front plow raise and lower - double acting cylinder		
	<b>c)</b> Wing plow raise and lower - double acting cylinder		
	<b>d)</b> Underbody plow raise and lower - double acting cylinder (individual port relief for this function) with down pressure regulator.		
	<b>e)</b> Floor tilt (dump box) raise and lower – double acting cylinder		
	<b>f)</b> Conveyor – hydraulic motor		
	<b>g)</b> Spinner motor - bi-direction hydraulic motor		
	<b>h)</b> Material gate raise and lower– double acting cylinder		

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	i) Plow nose tilting/adjusting cylinder double acting controlled in cab for cutting edge control		
2.12.8	The control console for the hydraulic functions must:		
	a) Must be a Rexroth 550 electronic hydraulic system or compatible system or equivalent.		
	b) Be pedestal mounted in the truck cab between seats. Pedestal mount must not obstruct the removal and installation of engine or transmission access panels.		
	c) Include supply and installation of all interfaces, relays and cabling to activate valves controlling all plow, wing and dump functions.		
	d) Have a combination of at least two 4-way or one joysticks and momentary rocker switches to control the hydraulic functions contractor to consult with PCA to determine function designation)		
	e) Include 4 additional rocker switches to control user installed accessories such as lighting		
	f) A master switch to control a relay which must disconnect the hydraulics electrical system from the vehicle electrical system.		
	g) Back lighting for all the switches, joysticks and controls		
2.12.9	The electronic sander control must be mounted in immediate proximity to hydraulic controls and must incorporate:		
	a) Independent 10 position potentiometers for both the conveyor and the spinner		
	b) Switch's to reverse spinner and conveyor direction and buttons for pause and blast functions for the conveyor.		
	c) Low oil level warning light		

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	<b>d)</b> Manual and automatic control modes (in automatic mode application rates must be automatically adjusted for changes in vehicle ground speed). Sometimes referred to as open loop and closed loop.		
	<b>e)</b> A dedicated vehicle speed sensor for the sander control system		
	<b>f)</b> The ability to be calibrated and programed for the application of different materials		
	<b>g)</b> An off-loading function		
	<b>h)</b> An electronic display screen displaying material type being applied, application rates and spread width		
	<b>i)</b> A conveyor speed sensor to provide accurate conveyor speed feedback to the system controller		
	<b>j)</b> Control system must be capable of delivering 1000 kg per lane km of 12.5 mil winter abrasive material at a minimum speed of 45 km per hour.		
2.12.10	Hydraulic reservoir must be:		
	<b>a)</b> Swirl type of a capacity sufficient to properly cool system:		
	<b>b)</b> Mounted on top of vehicle frame behind cab		
	<b>c)</b> Mounted high enough to have the tank outlet at the same height or higher than the pump inlet		
	<b>d)</b> Constructed with 11 Gauge thick stainless steel SAE 304 stainless steel		
	<b>e)</b> Equipped with 6" stand pipe c/w filter screen to prevent contamination while filling		
	<b>f)</b> Permit the intake of air through a 40 micron breather screen during any variance in oil level		

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	<b>g)</b> Delivered with easily readable oil level (site glass) and temperature gauges		
	<b>h)</b> Delivered with a gate valve on the outlet to allow for downstream repairs without draining reservoir		
	<b>i)</b> Delivered with an unobstructed drain valve for changing reservoir oil		
2.12.11	Hydraulic system installation		
	<b>a)</b> Must be completely tested before release to destination		
	<b>b)</b> Must operate multiple hydraulic controlled functions simultaneously without interrupting sander operation		
	<b>c)</b> Valving, solenoids and electrical components must be mounted in a weather proof enclosure protected from the elements and corrosive products used in this application. Enclosure to be mounted on top of vehicle frame behind cab and out of the direct pathway of road material and salt spray thrown up from the wheels. The enclosure may attached to or integral to the hydraulic fluid reservoir.		
	<b>d)</b> All electrical connections must be water and corrosion resistant.		
	<b>e)</b> Components mounted outside the cab must be mounted in such a way as to not obstruct the operator's view of both the spinner and the material gate.		
	<b>f)</b> Controls and display mounted inside the cab must be mounted so that the operator does not have to turn his head or body more than 45 degrees from the straight ahead position to operate controls or view display screens.		
2.12.12	Technical support and parts supply must be readily available and within a 500 km radius of the delivered location.		

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2.12.13	Supply repair and parts manuals as per to Riding Mountain National Park garage.		
<b>2.13 MOUNTED EQUIPMENT</b>			
2.13.1	Supply and Install a dump box with sander, conveyor, spinner, material gate and tilting floor		
	a) Sander/Dump Body: Heavy duty body serving as a spreader or dump, transformed by a hydraulic tilting floor and doors (Or other options) that drop down or insert to cover the conveyor chain and floor.		
	Approximate Dimensions (minimum):		
	1. Inside width: 88"		
	2. Inside length: 168"		
	3. Side height: 38"		
	4. Tailgate height: 50"		
	5. Cab shield: 24"		
	6. Capacity: 12 cubic yards at water level		
	7. Wind deflectors installed on top of end gate area and also on both sides of rear of box to keep LED lights and back of box clear of snow build up.		
	b) Cab shield constructed from 10 gauge steel and reinforced at both ends		
	c) Front Panel constructed from 3/16" thick solid steel plate		
	d) Reinforcement consists of two full height and one full width 3/16" thick steel "V" shaped gussets welded to the outside of the front panel		

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	e) Sides constructed from 3/16" steel, reinforced with two 10 gauge side posts per side		
	f) Tailgate Constructed of 3/16" steel		
	g) Tailgate, when horizontal, must be level with the floor of the body		
	h) Tailgate latch must be over-centre, self-locking design and must be air operated		
	i) The boxed rear corner posts must have provisions to mount 6 (3 per side) recessed oval tail lights		
	j) Safety leg to hold the box in the raised position must be installed		
	k) Floor		
	1. Constructed of 3/16" thick 180,000 psi yield strength steel		
	2. Floor Hinge must be bolt on (To be discussed with contractor for removal winter)		
	3. Safety leg to hold the tilt floor in the raised position must be installed.		
	4. Hinged floor plates must be installed in the box that must drop in place over and protect the conveyor chain when the box is being used to haul material. There must be a provision to secure the floor plates in an upright position		
	l) Under Structure (minimum)		
	1. Two full length 10" I-beams at 25.4 pds. per foot		
	2. Longitudinal Conveyor must be an integral part of the body floor and run longitudinally down the driver's side of the body, discharging in front of the rear wheels		

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	3. Conveyor frame is constructed of 3/16" thick 180,000 psi steel with removable conveyor wear plate		
	4. Chain maintenance system including access panel in rear apron must allow for removal of chain and slotted doghouse must allow for removal of gearbox.		
	5. Self-cleaning pintle type chain		
	6. Chain links are protected by integral chain guard leaving only bar flights exposed		
	7. Chain is driven by 25:1 ratio gearbox		
	8. Front sprockets are ductile cast iron grade 60		
	9. Driveshaft is 1 1/4" high resistant stress proof 100,000 psi material		
	10. Rear sprockets are ductile cast iron grade 30		
	11. Idler shaft is 1" diameter 90,000 psi steel		
	12. Bearings are self-aligning and grease able		
	13. Auto tension device for conveyor chain or adjustable by use of two grease adjustable actuators. To be grease able from an accessible remote location with extendable hoses for ease of adjustment.		
	14. Hydraulic motor adequately sized for application – system must be able to discharge 1000 kg of 12.5 mil winter abrasive material per lane km at 45 km per hour.		



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	15. Direction of material flow on cross conveyor or auger(s) shall be controlled by switch on operator control panel without having to manually engage or disengage drive motors.		
	16. Discharge gate opening scale - required with 11 markings evenly spaced and numbered from 0 (closed) to 10 (fully open). The scale and indicator shall be visible to the operator in the left hand rear view mirror.		
	17. Discharge gate shall be operated by hydraulic cylinder controlled from inside the cab. (summer operations only)		
	<b>m) Spinner Assembly</b>		
	1. Spinner shaft is sealed type with hydraulic motor on top		
	2. 30 cubic inch bi-rotational, hydraulic motor		
	3. Spinner assembly chassis mounted, laterally adjustable and removable		
	4. Urethane spreading disc is 18" diameter		
	5. Non adhesive polyethylene chute feeds the spreading disc		
	6. A poly or stainless steel chute shall be provided to place salt from cross conveyor in a narrow strip approximately 8 inches outside of left hand rear tires. This chute shall be stored on unit at all times.		
	7. Spinner assembly shall incorporate a swing away storage position and be adjustable		
	8. Spread - shall be capable of spreading evenly up to 35 ft.		
	9. A polyurethane spinner shall be supplied spreading on left hand side ahead of rear wheels		

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	10. Spinner light to be installed with separate switch in cab.		
	n) Hoist Cylinder		
	1. Two stage telescopic cylinder, with capacity of 30 tons at 2000 psi		
	o) Floor Tilt Hydraulic Cylinders		
	1. Two double acting cylinders, with combined capacity of 19 tons at 2000 psi		
	2. Cylinder ends contain bushings with grooves and zerks for greasing attached to auto greaser		
	3. Pins holding cylinders in place are made from 60,000 psi cold roll steel		
	p) Material Gate Cylinder		
	1. One double acting cylinder with a 12-inch stroke. This cylinder shall work with the sanding unit control center for operations in winter mode.		
	q) Remote/Automatic Greasing		
	1. Automatic greaser to be installed for all components of the sanding/spreading unit and box and hoist and truck and all grease able locations on the unit. Not limited to but including suspension and steering and brakes. All grease able locations to be included except drive line		
	2. Supply one (1) filler pump for system and one (1) pail of grease for unit		
	3. Grease points not able to be on auto greaser must be identified to project authority by diagram		

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	<b>r) Finish</b>		
	1. All steel must be sandblasted		
	2. All steel must be primed with an epoxy primer and then painted with a high quality epoxy or urethane paint to match the colour of the cab		
	<b>s) Access ladder into truck box:</b>		
	1. one (1) required, located on left hand side approximately center to rear of dump body.		
	2. must be Zico Quic-ladder swing-out & down RL 12 series or an approved alternate as described below.		
	3. Ladder rungs - traction type rungs, 13-gauge steel, 2 1/4 in. width, 2-hole design, Traction Tread Products or equal.		
	4. First rungs to be maximum 22 in. from ground level, 14 in. rung spacing to top of body.		
	5. Grab handles - located for ergonomic access to top of box.		
	6. Lower part of access ladder shall fold upward for storage		
	7. One access step shall be placed inside of box in suitable location to allow operator access to box interior. Step shall be designed minimize effect on flow of material when dumping		
	<b>t) Steel shovel holder on front wall, driver's side.</b>		
	<b>u) AIR TARP SYSTEM</b>		
	1. Tarp roller shall be protected with a full width metal shield.		

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	2. Tarp assembly shall not interfere with visibility of warning beacon to the rear.		
	3. Aluminum 1 1/2" x 1 1/2" 'DOG LEGGED' tarp arms		
	4. Tarp cover shall be black mesh type.		
	5. All tarp operating components shall be completely covered with removable shields.		
	6. A manual override system shall be included as well.		
	<b>v) Splash guards</b>		
	1. Anti-sail splashguards shall be supplied and installed for both the front and rear dual tires.		
	2. Splashguards shall be full width of dual tires and not more than 12" minimum road clearance.		
	3. No manufacturer's advertising shall be affixed to the splashguards.		
	<b>w) LED warning light</b> Beacons shall be provided with (2) in cab switches (1) to flash in amber only (summer operations), and (1) to flash amber/blue (winter operations). All warning lights to flash same light color at same time. (minibar).  Flash rate shall be max 1 flash per second. Warning beacon and LED strobe lamps shall have separate switches and operate independently. Wig wags back of box in amber and blue with separate switch for winter/summer operations		

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	(X) LED heated plow lights to be mounted on hood. High and low beams with signal lights Snow plow lights shall be controlled by existing truck light switches and controls. A clearly marked switch shall be installed on the instrument panel to allow the operator to switch between plow lights and truck lights		
	(Y) Plow nose/right hand Wing /under body plow blades and shoes Must have carbide blades with a steel blade front plate and all attachment shoes to be carbide also.		
	(Z) All warning lights must be configured and supplied as per document if not listed in document. TAC lighting standards attached		
<b>2.14 FULL TRIP ONEWAY PLOW</b>			
2.14.1	The weight of the plow shall range from 2,100 to 2,300 lbs. and shall be constructed to prevent the accumulation of water in any area.		
	(A) Plow shall have eight (8) 3/8" 100% welded ribs. Top rail of the moldboard shall be 2 1/2" x 2 1/2" angle iron 100% welded. Thickness of moldboard and hood shall be 10 U.S.S. ga. (.1345). Moldboard shall be smooth curve - no bends or formed breaks.		

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	(B) INTAKE END: 26" minimum DISCHARGE END: 54" minimum Overall length shall be 14' 4" minimum plow shall clear 9'3" @ 37 degrees. Hydraulic power tilt moldboard with hardened chromed 4" D.A. cylinder and in-cab control and separate Sauer Danfoss PVG32 valve section at front of chassis. Hydraulic tilt moldboard angle indicator		
	(C) Anti-sail (VCL #40801137) bolt on rubber 5/8" x 12" width full width rubber deflector across top of moldboard. 36" florescent marker on each end of moldboard.		
	(D) Upgraded grade 70 lift chains (E) 3-piece carbide cutting edge with 1/2" mold board back blade and Carbide nose piece.		
	(F) Hydraulic power tilt moldboard with hardened chromed 4" D.A. cylinder and in-cab control and separate Sauer Danfoss PVG32 valve section at front of chassis or compatible. Hydraulic tilt		
	(G) Must have fold away front lift assembly for summer operation of truck.		
	(H) Two "mushroom style" or compatible drive frame shoes c/w with screw height adjusters shall be provided Shoes shall be equipped with carbide inserts.		
	(I) Moldboard shall be drilled with $1\frac{1}{16}$ in. diameter holes on a 6 in. on centre spacing. To accommodate 4T2966 Blades.		

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	(J) One way quick attach shall match present RMNP plow hookups being Henderson so we can interchange all plows for either trucks in the fleet.		
<b>2.15 underbody plow 10 ft long</b>			
	Must install a Monashee UBP 1000 or Equivalent under body plow, controls and heat treated blade carbide with a steel backer blade in front of carbides.		
	(A) Must have Carbine blades with steel cover blade. Carbide shoes if applicable		
<b>2.16 RIGHT HAND MID MOUNT PUSH AND PULL WING</b>			
2.16.1	<b>FRONT WING POST</b>  (1) The front wing post and mounting brackets shall attach to the right hand truck chassis frame rail just ahead of the rear wheels		
2.16.2	<b>REAR WING TOWER</b>  (1) Rear wing tower to be bolted to the chassis behind the rear wheels and be easily removed for summer operations to reduce weight		
2.16.3	<b>LEVELING WING</b>  (1) The levelling wing shall be a tapered and flared design with a leading edge height of 27 in minimum and a discharge height of		
2.16.4	<b>Additional requirements for wing</b> (1) Two (2) Grote or Equivalent snow wing warning lights, part number 78573 and 78563, shall be installed on snow wing and Warning lights shall be wired to LED		
	<b>INSTALLATION</b>		

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2.17.1	The equipment must be neatly mounted on the truck furnished by the Contractor. Installation must include all hoses, fittings and other appurtenance required to have a complete and ready unit. There must be hood mounted LED heated plow lights, body lights, a spinner light and wing light and mud flaps mounted with system. All steel must be sand blasted before primer and paint is applied.		
2.17.2	Note . Vendor's bid for combination of engine RPM, transmission, axle ratio, and tire size ensure that the vehicle will function to end use purpose with regard to acceleration, gradeability and start ability under either empty or fully loaded conditions.		
<b>PART 3 – CLIENT AND CONTRACTOR CONSULTATIONS</b>			
3.1	A prebuild meeting will be held with RMNP designated staff and discussion before construction commences.at agreed upon time and place.		
3.2	With regards to the installation of attachments, consultations between the Client and Contractor are be scheduled at mutually agreeable times between the Project Authority and the Contractor's Representative. These consultations must not result in any modifications or alterations to the specifications detailed in Annex "A".		



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